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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/560,268	04/26/00	LEE	W 150.0056 010

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IM52/0508

EXAMINER

DEO, D

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 05/08/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/560,268

Applicant(s)

LEE ET AL.

Examiner

DuyVu n Deo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-39 and 46-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 56-61 is/are allowed.
- 6) ☒ Claim(s) 37-39, 46-55, 62, 63 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 37-39, 46-55, 62, 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. and Hayashi et al. (US 5,482,895).

Williams describes an etching composition comprising a HCl (claimed mineral acid), hydrogen peroxide and deionized water (ab., col. 4, line 16-24; example 1). Unlike claims 38 and 39, Williams doesn't describe claimed ratio of acid:peroxide:water in a range of 1:1:35-1:1:5 or 1:1:25-1:1:10. His example uses 600 ml of deionized water, 150 ml of mineral acid, and 50 ml of peroxide, which corresponds to the ratio of 3:1:12. On the other hands, Hayashi teaches using a copper etchant having a ratio of mineral acid:peroxide of either 1:1 or 3:1 (col. 10, line 54-55). It would have been obvious for one skill in the art at the time of the invention that the optimum ratio of etchant's components is determined depending on the type of material being etched and through routine experimentation with an anticipation of an expected result. *In Re Aller et al.*, 105 USPQ 233.

Unlike claims 47, 51, 52, and 62, above prior art doesn't describe the composition has an etching rate for cobalt at 1000 angstrom/min and metal nitride at 50-250 angstrom/min. however, the etching rate of each metal and metal nitride would be obvious to one skill in the art to be determined through experimentation and test runs. Since composition of above prior art

can be used to etch metal and metal alloys which would include cobalt and metal nitride. One skill in the art would find it obvious to do test runs in order to obtain the optimum processing parameters including etchant ratio for the etch rate of the metal or metal alloy being etched with an anticipation of an expected result. *In re Aller et al.*, 105 USPQ 233.

Allowable Subject Matter

3. Claims 56-61 are allowed because Williams doesn't describe the composition consisting essentially of a mineral acid, a peroxide, and deionized water.

Response to Arguments

4. Applicant's arguments filed 3/30/01 have been fully considered but they are not persuasive.

Referring to applicant's argument that there is no motivation to combine Williams and Hayashi. They both teach substantially the same composition for etching metal. Therefore, one skill in the art would find it obvious to view their teaching in order obtain a composition for etching metal and metal alloys.

Concerning to applicant's argument that Hayashi teaches a more concentration composition of HCl and hydrogen peroxide in col. 10, line 53-55. Examiner disagrees because col. 10, line 53-55 is more likely to display the ratio of the HCl and hydrogen peroxide than the actual concentration of HCl and hydrogen peroxide in the composition.

Referring to applicant's argument that Hayashi using one solution for cobalt and another for metal nitride is acknowledged. However, The composition of etching cobalt and metal nitride can be used to etch different material and each material would have different etch rate. The composition of HCl and hydrogen peroxide is certainly can be used to etch metal and metal

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alloys as taught by Williams. As shown in the above rejection, depending on the material being etched, the ratio of HCl and hydrogen peroxide is determined through test runs in order to achieve an optimum etch for each metal or metal alloys.

Conclusion

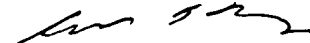
5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n Deo whose telephone number is 703-305-0515.

DVD

May 7, 2001


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